

REMARKS

In the Office Action, the Examiner rejected claims 1, 11, 32, 37, 42, and 88 under 35 U.S.C. §102(e) as being anticipated by the Vancelette patent.

The Vancelette patent shows in Figure 1 video cameras 12, 14 and 16 providing video and audio signals on corresponding channels A, B, and C to a transmitter 20. The transmitter 20 digitizes and compresses the video and audio signals of channels A, B, and C as a packetized data stream conforming to the MPEG-2 or DigiCipher® II standards.

A multiplexer/encryptor 26 combines the packetized data stream with control messages from an operator interface 28. The control messages may include software code download packets that include computer software to be downloaded to a viewer's set-top terminal 70. The software controls the operation of the terminal 70, including an associated user interface 535 and OSD processor 545.

The packetized data stream and control messages are encrypted. The encrypted packetized data stream and control messages are provided to a forward error correction (FEC) encoder 30 and then to a QAM modulator

32 for transmission as a transmitted signal 210 to a cable headend 50.

At the cable headend 50, the transmitted signal 210 is combined with local programming 220, and the combined signal is transmitted to a subscriber 60 having the set-top terminal 70 for display on a television 80. Thus, as shown in Figure 2, the cable headend 50 includes a multiplexer 230 that combines the local programming 220 with the transmitted signal 210 from the transmitter 20 under control of an operator interface 240 and a memory 250. The operator interface 240 provides channel mapping data, on-screen display graphics data, and terminal address data. The channel mapping data, OSD data, and terminal address data are stored in the memory 250.

As shown in Figure 5, the set-top terminal 70 receives the packetized data stream at an input 510 and provides the packetized data stream to an FEC decoder 520 and a demodulator 525. The forward error corrected and demodulated packetized data stream is provided to a demultiplexer and decryptor 530, where the encrypted data packets are decrypted and separated into two data paths. In one path, the control data packets contained in the packetized data stream are provided to a microprocessor 540. In the other path, the video and audio packets

contained in the packetized data stream are provided to a processing and decompression block 555.

The software in the code download packets of the packetized data stream is executed by the microprocessor 540 and the OSD graphics processor 545 to provide alternative audio and video capabilities. For instance, "code 1" packets 410 may include software code related to on-screen graphics. The microprocessor 540 also receives a signal from the user interface 535, which is responsive to viewer commands. In response to OSD data received via the packetized data stream and the code download packets, the OSD processor 545 creates a graphical display that informs the viewer of the various available audio and video options. The user interface 535 receives the viewer's commands and provides them to the microprocessor 540 and a memory 560.

If the viewer has selected a primary channel to view, the microprocessor 540 determines which audio and video packets in the received data stream correspond to the selected primary channel, and the appropriate video and audio packets are processed by the block 555. Additionally, OSD data from the OSD processor 545 is combined with the video signal by the block 555 to form a

composite video signal to display the OSD graphics and the video data.

As shown in Figure 6, software is downloaded to or installed on the terminal 70 and stored in memory at 610. At 620, channel mapping and other control data are received via the packetized data stream and are stored in memory. At 630, the user selects a primary channel. At 640, the audio and video packets of the selected primary channel are processed and displayed. At 650, the user invokes the OSD graphic display. At 660, the user selects desired alternative audio/video signals. At 670, the microprocessor 540 reads the memory to obtain and modify the channel mapping and other control data corresponding to the selected audio and video signals. The microprocessor 540 then issues a selection command to the decompression and processing function 555 so that the corresponding audio and video packets are processed and displayed along with the OSD graphics.

Independent claim 1 of the present application is directed to an MPEG on-screen display coder comprising an on-screen display turn on device and an MPEG encoder. The on-screen display turn on device is arranged to provide an output in response to an on-screen display instruction. The MPEG encoder is coupled to the an on-

screen display turn on device and is arranged to receive dynamic video frames and to process the dynamic video frames so as to encode frames with an on-screen display in response to the on-screen display instruction.

APPLICANTS' ARGUMENT

The Vancelette patent does not disclose that dynamic video frames are processed by an MPEG encoder so as to encode frames with the on-screen display. The Vancelette patent merely discloses at column 10, lines 32-38 that OSD data from an OSD processor 545 is combined with a video signal by a function 555 to form a composite video signal including, for instance, a split screen or overlay format with part of the screen displaying OSD graphics and part of the screen displaying the video.

As can be seen, there is no mention here of an MPEG encoder that encodes frames with an on-screen display as required by independent claim 1.

The Examiner points to column 6, lines 1-25 and to column 7, lines 40-67 for an MPEG encoder that encodes frames with an on-screen display as recite in independent claim 1.

However, column 6, lines 1-25 of the Vancelette patent merely states (i) that the video cameras 12, 14,

and 16 provide video and audio signals on corresponding channels A, B, and C, (ii) that the video and audio signals are digitized, compressed, and packetized in a data stream so as to conform to the MPEG-2 or DigiCipher® standards, and (iii) that the resulting stream is combined with control messages from an operator interface 28 at the multiplexer/encryptor 26.

As can be seen, there is no mention here of an MPEG encoder that encodes frames with an on-screen display as required by independent claim 1.

Column 7, lines 40-67 of the Vancelette patent merely states (i) that the operator interface 240 in the cable headend 50 provides on-screen display graphics data, (ii) that the headend operator may insert control data via a multiplexer 230 grouping the audio and video signals of the packetized data stream and local programming together, and (iii) that the audio and video signals may be grouped according to a tiered marketing scheme.

Again, there is no mention here of an MPEG encoder that encodes frames with an on-screen display as required by independent claim 1.

Therefore, the Vancelette patent does not anticipate independent claim 1.

EXAMINER'S REPLY

The Examiner makes a number of assertions.

First, the Examiner asserts that the flow of information between the encoder, the mux, and the operator interface inherently includes inserting the OSD data into packetized control messages prior to encoding, pointing to column 6, lines 35-50 of the Vancelette patent.

Second, the Examiner asserts that channels A, B, and C are muxed together and that the user selects one of these channels by use of the user interface pointing to column 6, lines 15-25 of the Vancelette patent. Third, the Examiner asserts that, if the OSD data were sent after encoding of the audio/video streams, the output of the transmitter could not be described as a packetized data stream pointing to column 6, lines 60-67 and column 7, lines 1-18 of the Vancelette patent. Fourth, the

Examiner asserts that OSD processor 545 provides OSD data to the decompression and processing block 555 which decompresses the OSD data, pointing to column 10, lines 20-40 of the Vancelette patent and that, if the OSD were not encoded, there would be no need to decompress it.

Fifth, the Examiner asserts that the Vancelette does disclose an MPEG encoder and that the overlay function is

a sub-function of generating composite video. Sixth, the time base argument is not pertinent to independent claim 1 and will instead be discussed later where pertinent. Seventh, the I frame argument is not pertinent to independent claim 1 and will instead be discussed later where pertinent. Eighth, the Naimpally patent argument is not pertinent to independent claim 1 and will instead be discussed later where pertinent.

APPLICANTS' REBUTTAL

There are two preliminary matters that applicants wish to raise at the outset. The line numbers cited by the Examiner do not always seem to match the Vancelette patent. For example, column 6, lines 35-50 start inside of one paragraph and end inside another paragraph. However, in the discussion below, applicants will take the citations literally. Also, the Examiner did not use reference numerals in the Office Action, which has made it difficult to follow the Examiner's argument.

As to the Examiner's first assertion, applicants assume that the Examiner refers to the encoder 22, the mux 26, and the operator interface 28. In any case, column 6, lines 35-50 of the Vancelette patent does

not disclose that OSD data to be included in an on-screen display is inserted into the packetized data stream.

This portion of the Vancelette merely discloses that software code is inserted into the packetized data stream and that this software code, in part, controls operation of the OSD processor 545 in the terminal 70.

Accordingly, the Vancelette patent does not disclose that the transmitter 20 encodes frames with an on-screen display OSD as required by independent claim 1.

As to the Examiner's second assertion, applicants have no particular response other than to question the relevance of this assertion.

As to the Examiner's third assertion, applicants again point out that the transmitter 20 does not transit OSD data that will appear in an on-screen display as required by independent claim 1. Column 6, lines 60-67 and column 7, lines 1-18 of the Vancelette patent do not disclose anything to the contrary. This portion of the Vancelette patent merely describes that the packetized data stream is forward error corrected, modulated, and transmitted to the cable headend 50 for combining with local programming and control data before being transmitted from the cable headend 50 to subscribers. As can be seen, there is no disclosure here

that OSD data, which will appear in an on-screen display, is MPEG encoded and inserted into the packetized data stream.

The Vancelette patent does describe in column 7, line 27 through column 8, line 19 that the multiplexer 230 in the cable headend 50 provides channel mapping data, on-screen display graphics data, and terminal address data. However, this portion of the Vancelette seems to describe such data as control data and not as data that will appear on the on-screen display. And even if such inserted data were data that will appear on the on-screen display as required by independent claim 1, there is no requirement that the control data be MPEG encoded. Certainly, data such as control data can be inserted into packets without being MPEG encoded.

As to the Examiner's fourth assertion, the Vancelette patent does not disclose that OSD data is decompressed by the decompress and processing block 555. The Vancelette patent, such as at column 10, lines 20-40, merely discloses that video and audio packets are processed by the decompress and processing block 555, but that OSD data is merely combined with the video signal by the decompress and processing block 555 to form a composite video signal. The OSD data does not need to be

compressed for the decompress and processing block 555 to combine the OSD data with decompressed video data.

As to the Examiner's fifth assertion, the MPEG encoder to which the Examiner refers is in the transmitter 20 and, as discussed above, no OSD data to be included in an on-screen display, is inserted in the transmitter 20. Only, software is added to video and audio by the transmitter 20. Moreover, as also discussed above, the overlay function in generating composite video does not require an MPEG encoder.

Accordingly, the Examiner's argument with respect to independent claim 1 is based on inaccurate assertions and must fail. The Vancelette patent simply does not disclose an MPEG encoder that encodes video frames with an on-screen display as required by independent claim 1. Therefore, independent claim 1 is not anticipated by the Vancelette patent.

Independent claim 32 is directed to an MPEG on-screen display coder comprising an MPEG encoder and a multiplexer. The MPEG encoder encodes frames of a selected program with an on-screen display. The multiplexer replaces original frames with the encoded frames for supply to a digital television receiver.

As discussed above, the Vancelette patent does not disclose an MPEG encoder that encodes frames with an on-screen display. Therefore, the Vancelette patent does not anticipate independent claim 32.

Also, the Vancelette patent does not disclose that a multiplexer replaces original frames with these encoded frames. The Examiner did not specifically reply to this argument. Therefore, for this reason also, the Vancelette patent does not anticipate independent claim 32.

Independent claim 88 is directed to an MPEG on-screen display coder comprising a demultiplexer, an MPEG encoder, and a multiplexer. The demultiplexer is arranged to demultiplex frames of a selected video program from frames of a non-selected program in a transport stream. The MPEG encoder is arranged to receive the frames of the selected program and to process the frames of the selected program so as to encode frames with an on-screen display. The multiplexer is arranged to multiplex the encoded frames with the frames of the non-selected video program in the transport stream.

As discussed above, the Vancelette patent does not disclose an MPEG encoder that encodes frames with an

on-screen display. Therefore, the Vancelette patent does not anticipate independent claim 88.

Moreover, the Vancelette patent does not disclose that a multiplexer multiplexes video and on-screen displays on a frame basis. The Examiner did not specifically reply to this argument. Therefore, for this reason also, the Vancelette patent does not anticipate independent claim 88.

Because the Vancelette patent does not anticipate independent claims 1 and 32, the Vancelette patent does not anticipate dependent claims 11, 37, and 42.

In addition, dependent claim 37 recites that the encoded frames have a time base which is slaved to the original frames.

APPLICANTS' ARGUMENT

There is no disclosure in the Vancelette patent of an MPEG encoder that produces encoded frames having a time base which is slaved to the original frames.

The Examiner points to column 8, lines 30-60 for an MPEG encoder that meets the limitations of dependent claim 37.

However, this portion of the Vancelette patent merely discloses (i) that audio and video data packets are time-multiplexed by the multiplexer 26 to provide a packetized data stream 380, (ii) that the data stream 380 is modulated at a specific carrier frequency, (iii) that the packetized data stream from the operator interface 28 is provided to the multiplexer 26, (iv) that control message data packets are time-multiplexed by the multiplexer 26 to provide a packetized data stream 470, and (v) that the data stream 470 is modulated to a specific carrier frequency.

As can be seen, there is no mention in this portion of the Vancelette patent that the encoded frames have a time base which is slaved to the original frames as required by dependent claim 37.

Therefore, the Vancelette patent does not anticipate dependent claim 37.

EXAMINER'S REPLY

The Examiner's sixth assertion is pertinent to dependent claim 37. The Examiner asserts that time based

multiplexing is based on the characteristics of the original frames or on the time base of the original live video feed.

APPLICANTS' REBUTTAL

The multiplexing to which the Examiner refers is packet based and not frame based.

Accordingly, the Examiner's argument is not pertinent to dependent claim 37.

In the Office Action, the Examiner rejected claims 16, 17, 28, 29, 46, 47, 56, and 57 under 35 U.S.C. §103(a) as being unpatentable over the Vancelette patent.

APPLICANTS' ARGUMENT

As discussed above, the Vancelette patent does not disclose MPEG encoding of frames with an on-screen display. Therefore, claims 16, 17, 28, 29, 46, 47, 56, and 57 cannot be unpatentable over the Vancelette patent.

Moreover, because the Vancelette patent does not disclose MPEG encoding of frames with an on-screen display, the Vancelette patent cannot suggest encoding I frames with the on-screen display as recited in dependent claims 16, 28, 46, and 56, or encoding subsequent P

frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero as recited in dependent claims 17, 29, 47, and 57.

For this reason also, claims 16, 17, 28, 29, 46, 47, 56, and 57 cannot be unpatentable over the Vancelette patent.

EXAMINER'S REPLY

The Examiner's seventh assertion is pertinent to dependent claims 16, 28, 46, and 56. The Examiner asserts that, since the Examiner believes that there is an MPEG encoder disclosed in the Vancelette patent that encode frames with an on-screen display, the encoding of I and P frames would have been obvious.

APPLICANTS' REBUTTAL

As discussed above, the Vancelette patent does not disclose an MPEG encoder which encode frames with an on-screen display. Therefore, the Examiner's conclusion cannot follow.

Accordingly, dependent claims 16, 28, 46, and 56 cannot be unpatentable over the Vancelette patent.

Further, the Examiner does not address at all the requirements of dependent claims 17, 29, 47, and 57

that P frames by encoded by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero. The Vancelette cannot possibly suggest these requirements.

Accordingly, dependent claims 17, 29, 47, and 57 cannot be unpatentable over the Vancelette patent.

In the Office Action, the Examiner rejected claims 59-62, 64, 70, and 81-87 under 35 U.S.C. §103(a) as being unpatentable over the Vancelette patent in view of the Naimpally patent.

The Naimpally patent discloses the replacement of stuffing packets with private data packets in order to transmit private data in the transport stream. In this arrangement, a Transport Packet is captured from the Transport Stream. If the Transport Packet includes stuffing bytes, the location and number of the stuffing bytes are determined. Based on these determinations, the stuffing bytes are replaced with private data.

APPLICANTS' ARGUMENT

The Naimpally patent also fails to disclose MPEG encoding of frames with an on-screen display. Therefore, since the Vancelette patent likewise fails to

disclose MPEG encoding of frames with an on-screen display, the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of independent claims 1, 32, and 88.

Because the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the invention of independent claim 32, the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of dependent claims 59-61.

Accordingly, dependent claims 59-61 are not unpatentable over the Vancelette patent in view of the Naimpally patent.

Independent claim 62 is directed to an MPEG on-screen display coder comprising a buffer, an MPEG encoder, and a multiplexer. The buffer receives and buffers an MPEG transport data stream containing frames of a selected program and frames of a non-selected program. The MPEG encoder encodes frames of the selected program with an on-screen display. The multiplexer selectively passes to a digital television receiver the frames of the non-selected program, the encoded frames of the selected program, and original frames of the selected program.

As discussed above, neither the Vancelette patent nor the Naimpally patent discloses MPEG encoding of frames with an on-screen display. Therefore, the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of independent claim 62.

Because the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of independent claim 62, the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of dependent claims 64, 70, and 81-84.

Accordingly, dependent claims 64, 70, and 81-84 are not unpatentable over the Vancelette patent in view of the Naimpally patent.

Independent claim 85 is directed to an MPEG on-screen display coder comprising an MPEG encoder that encodes frames with an on-screen display, and a make-up packet source that adds make-up packets to each encoded frame as necessary to ensure that each encoded frame has as many transport packets as original frames.

As also discussed above, neither the Vancelette patent nor the Naimpally patent discloses MPEG encoding of frames with an on-screen display. Therefore, the

combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of independent claim 85.

Because the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of independent claim 85, the combination of the Vancelette patent and the Naimpally patent fails to disclose or suggest the inventions of dependent claims 86 and 87.

Accordingly, dependent claims 86 and 87 are not unpatentable over the Vancelette patent in view of the Naimpally patent.

Moreover dependent claim 64 recites that the encoded frames have a time base which is slaved to the original frames of the selected program.

As discussed above in connection with dependent claim 37, there is no disclosure in the Vancelette patent of an MPEG encoder that produces encoded frames having a time base which is slaved to the original frames.

Similarly, there is no disclosure in the Naimpally patent of an MPEG encoder that produces encoded frames having a time base which is slaved to the original frames.

Accordingly, the combination of the Vancelette patent and the Naimpally patent cannot disclose the invention of dependent claim 64.

Therefore, the Vancelette patent does not suggest the invention independent claim 64.

EXAMINER'S REPLY

The Examiner's seventh assertion is pertinent to the rejection of claims 59-62, 64, 70, and 81-87. The Examiner asserts that, with respect to the Naimpally patent, applicants cannot point out the individual failings of references.

EXAMINER'S REPLY

Examiner's eighth assertion simply is not true. The fact that neither reference discloses an MPEG encoder that encodes frames with an on-screen display is highly persuasive that, taken together, one skilled in the would not find it obvious to combine these references in a way that would produce the inventions of independent claims 62 and 85, or for that matter of independent claims 1, 32, and 88.

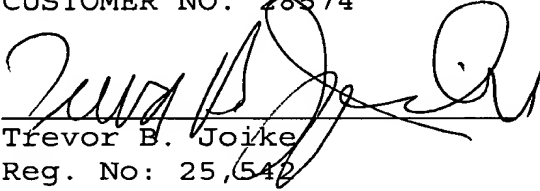
CONCLUSION

In view of the above, it is clear that the claims of the present application are patentable over the references applied by the Examiner. Accordingly, allowance of these claims and issuance of the above captioned patent application are respectfully requested.

Respectfully submitted,

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